

REMARKS

Claims 1-2, 4-8, 10, 14, 17, and 19 remain pending in the application. The claims have not been amended. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 2, 4-6, 8, 10, 14, 17, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pan (U.S. Pat. No. 6,501,663) in view of Akahira et al. (U.S. Pat. No. 6,145,981).

Claims 1, 2, 4-6, 8, 10, 14, 17, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pan in view of Mishima et al. (JP Pat. No. 10-312743).

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Pan in view of Akahira et al. and further in view of Kiguchi et al. (U.S. Pub. No. 2003/0003231).

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Pan in view of Mishima et al. and further in view of Kiguchi et al.

The Section 103 rejections are respectfully traversed.

Features Of The Pending Independent Claims

Claim 1 recites, in part, and with reference to Figures 4-6 for exemplary purposes only as the invention includes numerous embodiments, “forming a central part of the film pattern [W1] by depositing a plurality of first droplets spaced apart from each other on the substrate and depositing second droplets in spaces between the first droplets;” “forming one side [W2] with respect to the formed central part by depositing a plurality of third droplets spaced apart from each other on the substrate and depositing fourth

droplets in spaces between the third droplets;” and “forming the other side [W3] with respect to the formed central part by depositing a plurality of fifth droplets spaced apart from each other on the substrate and depositing sixth droplets in spaces between the fifth droplets.”

Claim 10 is similar to Claim 1. Claim 10 recites a method for manufacturing a device having a linear wiring pattern, rather than a linear film pattern as recited in Claim 1.

Claim 14 recites, in part, and with reference to Figures 4-6 for exemplary purposes only as the invention includes numerous embodiments, the following: forming a central part W1 of the film pattern by “discharging a set of linearly spaced apart second droplets on the substrate, the second droplets filling in gaps between the first droplets;” forming a first side W2 of the film pattern by “discharging a set of linearly spaced apart fourth droplets on the substrate, the fourth droplets filling in gaps between the third droplets;” and forming a second side W3 of the film pattern by “discharging a set of linearly spaced apart sixth droplets on the substrate, the sixth droplets filling in gaps between the fifth droplets.”

Advantages Of The Claimed Invention

The claimed methods provide numerous advantageous. For example, by forming the pattern in three parts with the middle part formed before the side parts, the width of the pattern can be increased by using lower volume droplets, which prevents bulging and other disadvantages associated with using larger volume droplets. [Paragraph [0009] of the application as filed]. Depositing droplets in gaps formed between previously deposited droplets as claimed also minimizes bulging because prior

to deposition of the second set of droplets, the first set has time to settle and thin out, thereby providing better control over the width of the pattern. [*Id.* at ¶ [0013]]. Depositing droplets so that they overlap each other suppresses occurrences of discontinuous line patterns, which can reduce conductivity. [*Id.* at ¶ [0011]].

The Cited Pan Reference

The Pan reference appears to disclose, with reference to Figure 15, forming a plurality of rows of film patterns. A first side pattern 153 is formed first. A middle pattern 155 is formed second, not first as claimed. A second side pattern 157 is formed third. The droplets of each pattern are formed continuously and not deposited between previously deposited droplets as claimed. Thus, the Pan reference teaches away from the features set forth in the independent claims.

The Office Action acknowledges that “Pan does not explicitly teach forming a central part of the film pattern 155 first, then forming the film pattern 153 and film pattern 157 around film pattern 155” and that “Pan does not teach that film pattern 155 is formed by depositing a plurality of first droplets spaced apart from each other on the substrate and depositing second droplets in spaces between the first droplets,” as is substantially set forth in each of the independent Claims 1, 10, and 14. [12-15-08 Office Action at 2, 3 and 5].

The Office Action asserts that in light of the teachings of Pan, “one of ordinary skill in the art would have recognized that any order of forming the film patterns would have achieved similar results and would have performed the arrangement of the film patterns in any order with predictable results” and that “the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected

results.” 12-15-08 Office Action at 2 (citing *In re Burhans*, 69 U.S.P.Q. 330 (C.C.P.A. 1946)).

The Cited Akahira et. al Reference

The Akahira et al. reference appears to disclose, with reference to Figure 16B, a multi-pass droplet deposition operation. The Office Action asserts that Akahira teaches “depositing a plurality of first droplets spaced apart from each other and depositing second droplets in spaces between the first droplets (16B).” However, while the droplets are designated with numerals “1,” “2,” and “3,” Akahira does not appear to disclose the manner or sequence of deposition. For example, Akahira appears silent as to whether the droplets are deposited as the Examiner asserts, or whether the droplets are deposited continuously in numerical order. The Office Action fails to cite any portion of the written description that supports its interpretation. Thus, the Office Action has failed to establish a *prima facie* case.

The Claims Are Not Obvious In Light Of The Combination Of Pan And Akahira et al.

The Office Action asserts that it would have been obvious to modify the teachings of Pan to deposit the central part of the pattern first, followed by the first and second sides absent a showing of new or unexpected results. The Office Action fails to provide any support for this assertion of obviousness as required by the MPEP. As set forth at MPEP § 2142:

the key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.* noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made **explicit**. The Federal Circuit has stated that “rejection on obviousness cannot be sustained with mere conclusory statements; instead, **there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness**”

(internal citations omitted, emphasis added). Because the Office Action has provided only conclusory statements, it has failed to establish a *prima facie* case of obviousness.

The Office Action bases its conclusion of obviousness solely on *In re Burhans*. 69 U.S.P.Q. 330 (C.C.P.A. 1946). According to the Office Action, *In re Burhans* sets forth a *per se* rule that “the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results.” [12-15-08 Office Action at 2]. However, the Federal Circuit has expressly rejected relying on alleged *per se* rules as the sole basis for an obviousness rejection.

In *In re Ochiai*, the Federal Circuit overturned a Board of Patent Appeals decision affirming an obviousness rejection based on the Board’s use of a *per se* rule. 71 F.3d 1565 (Fed. Cir. 1995). The Federal Circuit stated that the test of obviousness is *vel non* statutory and “requires that one compare the claim’s subject matter as a whole with the prior art to which said subject matter pertains.” [*Id.* at 1569]. The Federal Circuit held that the Board’s analysis “is founded on legal error because it substitutes supposed *per se* rules for the particularized inquiry required by section 103.” [*Id.* at 1571].

The Federal Circuit concluded with a detailed admonition of *per se* rules:

The use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention – including all its limitations – with the teachings of the prior art, flouts section 103 and the fundamental case law applying it. *Per se* rules that eliminate the need for fact-specific analysis of claims and prior art may be administratively convenient for PTO examiners and the Board. Indeed, they have been sanctioned by the Board as well. **But reliance on per se rules of obviousness is legally incorrect and must cease.** Any such administrative convenience is simply inconsistent with section 103, which, according to *Graham* and its progeny, entitled an applicant to issuance of an other-wise proper patent unless the PTO establishes that the invention as claimed in the application is obvious over cited prior art, based on the specific comparison of that prior art with claim limitations. We once again hold today that our

precedents do not establish any *per se* rules of obviousness, just as those precedents themselves expressly declined to create such rules.

[*Id.* at 1572].

Nonetheless, even if the Office Action's reliance on *In re Burhans* is proper to establish a *prima facie* rejection, the claims are not obvious because the claimed features provide new and unexpected results. As Applicants explained in detail above, depositing the center of the pattern first with droplets deposited between previously deposited droplets provides a pattern of increased width and reduces undesirable droplet bulging. [Paragraph [0009] of the application as filed]. Depositing droplets in gaps formed between previously deposited droplets as claimed also minimizes bulging because prior to the deposition of the second set of droplets the first set has time to settle and thin out, thereby providing better control over the width of the pattern. [*Id.* at ¶ [0013]]. Depositing droplets so that they overlap each other improves conductivity by reducing the occurrence of breaks in the pattern.

In contrast to the Office Action's assertions and as explained above, the Akahira et al. reference does not appear to describe how the droplets are deposited. For example, the Akahira et al. reference appears silent as to whether the droplets are deposited as the Examiner asserts, or whether the droplets are deposited continuously in numerical order without leaving spaces between droplets as they are deposited. Thus, even if the Office Action's reliance on *In re Burhans* is proper and even if it is determined that Applicants' showing of new and unexpected results is insufficient, independent Claims 1, 10, and 14 are not obvious because the cited art fails to disclose or suggest depositing first droplets spaced apart and depositing second droplets in spaces between the first droplets.

As set forth above, independent Claims 1, 10, and 14 are not obvious in light of Pan in combination with Akahira et al. Therefore, Applicants respectfully request reconsideration and withdrawal of this Section 103 rejection of Claims 1, 10, and 14, as well as those claims dependent therefrom.

The Claims Are Not Obvious In Light Of The Combination Of Pan And Mishima et al.

The Pan reference is discussed above.

The Mishima et al. reference appears to disclose, with reference to Figures 4(a) and 4(b), depositing droplets on top of each other, not in spaces between previously deposited droplets. With reference to Figure 3, Mishima et al. appears to disclose depositing center droplets last, thus teaching away from the claimed methods in which the center droplets are deposited first. Mishima et al. provides no support for the Office Action's assertion that "Mishima teaches that it was well known in the art of ink jet printing to have formed a film pattern by depositing a plurality of first droplets spaced apart from each other and depositing second droplets in spaces between the first droplets (Figs. 4(a) – 4(b)),” as generally set forth in the independent claims. [12-15-08 Office Action at 5].

Thus, the combination of Pan and Mishima et al. fails to render obvious each and every feature of independent Claims 1, 10, and 14. Applicants respectfully request reconsideration and withdrawal of this Section 103 rejection of Claims 1, 10, and 14, as well as those claims dependent therefrom.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request

that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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